

**CLAIMS****WHAT IS CLAIMED IS:**

1. An asynchronous transfer mode (ATM) digital subscriber line (DSL)  
5 head-end network; comprising:  
a network control system, which manages call traffic through the head-end  
network by assigning traffic to voice channels based on available time slots from a  
telephone company;  
a plurality of customer premise equipment (CPE) units which provide  
10 customer line terminations with telephone service, the CPE units being coupled to  
an ATM multiplexer;  
the network control system having an assignment mechanism which  
concentrates telecommunications traffic between the multiplexer and an  
asynchronous transfer mode (ATM) switch on the channels to compensate for a  
15 number of customer line terminations exceeding a number of voice channels.
2. The network as recited in claim 1, wherein the assignment  
mechanism allocates voice channels in accordance with a priority of a call.
- 20 3. The network as recited in claim 1, wherein the number of customer  
line terminations exceeds the number of voice channels by greater than 2.
4. The network as recited in claim 1, wherein the voice channels are  
included on digital signal 1 (DS1) links to a telephone company switch.  
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5. The network as recited in claim 1, wherein the telecommunications  
traffic includes voice and data transfer.
6. The network as recited in claim 1, wherein the assignment  
30 mechanism is embodied in a software application stored on the network control  
system.
7. A method for concentrating traffic on a digital subscriber line (DSL)  
head-end network, comprising the steps of:

providing a plurality of customer premise equipment devices, which provide telephone interfaces to customer terminations;

allocating timeslots from a telephone company for usage of a telephone network;

- 5 managing the timeslots using a network control system by employing channels to transmit and receive information through the head-end network; and  
concentrating telecommunications traffic between the customer terminations and an asynchronous transfer mode (ATM) switch on the channels to compensate for a number of customer line terminations exceeding a number of  
10 available channels.

8. The method as recited in claim 7, wherein the step of concentrating telecommunications traffic includes the steps of:

- evaluating demand on the head-end network; and  
15 determining a ratio between the number of customer line terminations to number of available channels based on the demand.

9. The method as recited in claim 8, wherein the ratio is greater than two.

20 10. The method as recited in claim 8, wherein the ratio is greater than ten.

11. The method as recited in claim 7, further comprising the step of  
25 additionally concentrating traffic by the telephone company.

12. The method as recited in claim 7, wherein the step of managing the timeslots includes the step of assigning incoming and outgoing calls to the channels in accordance with a priority criterion.

30 13. The method as recited in claim 12, wherein the priority criterion includes first-in first-out criterion.

14. The method as recited in claim 12, wherein the priority criterion includes priority of incoming calls over outgoing calls.

5 15. The method as recited in claim 12, wherein the priority criterion includes priority of voice over data.

16. The method as recited in claim 7, further comprising the step of establishing virtual circuits through the head-end network to make connects between the telephone company and the customer premise equipment devices.

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